

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J., by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY BOARD  
OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent,

*Defendants,*

and

THE STATE OF WEST VIRGINIA,

*Defendant-Intervenor.*

Civil Action No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**SUPPLEMENTAL EXPERT DECLARATION OF  
JOSHUA D. SAFER, MD, FACP, FACE**

1. I have been retained by counsel for Defendants as an expert in connection with the above-captioned litigation.

2. My background and credentials are set forth in my previous declaration dated May 10, 2021 (“Safer Decl.”). *See* ECF No. 2-1. In my previous declaration, I explained why “[t]here is no medical justification for West Virginia’s categorical exclusion of girls who are transgender from participating in scholastic athletics on the same teams as other girls.” (Safer Decl. ¶ 44.)

3. I reviewed the declaration of Gregory A. Brown, Ph.D. (“Brown Decl.”) dated June 3, 2020, submitted by West Virginia, ECF No. 49-2, which is a declaration Dr. Brown previously submitted in *Hecox v. Little*. I submitted a supplemental declaration in *Hecox v. Little*

responding to Dr. Brown, and I recount many of those same points here. As in *Hecox*, I do not specifically address each study or article cited by Dr. Brown, but instead explain the overall problems with the conclusions that he draws and provide data showing why such conclusions are in error. I reserve the right to supplement my opinions concerning Dr. Brown's opinions if necessary as the case proceeds.

4. In his declaration, Dr. Brown offers three main opinions (Brown Decl. ¶ 163):

- a. "At the level of elite, sub elite, high school, and recreational competition, men or boys have an advantage over comparably aged women or girls, in almost all athletic contests";
- b. "Biological male physiology and anatomy is the basis for the performance advantage that men or boys have over women or girls, in almost all athletic contests"; and
- c. "Administration of androgen inhibitors and cross-sex hormones to men or adolescent boys after male puberty . . . does not eliminate the performance advantage of men or adolescent boys over women or adolescent girls in almost all athletic contests."<sup>1</sup>

5. With respect to Dr. Brown's point (a), it is my opinion that on average, beginning during puberty, cisgender men and boys have better performance outcomes in most athletic competition as compared to cisgender women and girls. However, this is not a controversial statement and is beside the point here, as it does not concern the alleged performance advantages of transgender athletes (as opposed to men versus women generally).

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<sup>1</sup> In this sentence, Dr. Brown appears to use the term "men or adolescent boys" to refer both to cisgender men and boys and to transgender women and girls. He also appears to use the term "women and adolescent girls" to refer to only cisgender women and girls. As I understand it, Dr. Brown's contention is that: Administration of androgen inhibitors and cross-sex hormones to *transgender women and adolescent girls* after endogenous puberty does not eliminate the performance advantage of cisgender men or adolescent boys over cisgender women or adolescent girls in almost all athletic contests.

6. With respect to Dr. Brown's point (b), it is not clear to me what specifically Dr. Brown is referring to when he says that a performance advantage derives from "biological male physiology and anatomy." It is my opinion, and the studies cited by Dr. Brown indicate, that a performance advantage observed for cisgender men compared to cisgender women is due to circulating testosterone levels that typically diverge significantly between cisgender males and females at puberty.

7. To the extent that the "physiology and anatomy" of cisgender men on average provide an athletic advantage over cisgender women on average, those physiological and anatomical characteristics develop as a result of circulating testosterone beginning at puberty. As Dr. Brown himself acknowledges when quoting from Handelsman, et al. (Brown Decl. ¶ 81), the "evidence makes it highly likely that the sex difference in circulating testosterone of adults explains most, if not all, of the sex differences in sporting performance." DJ *See* Handelsman, DJ et al., Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance, 39 Endocrine Reviews 803, 803, 820 (2018).

8. None of the studies cited by Dr. Brown about anatomy and physiology make claims about inherent differences in athleticism that are independent of levels of circulating testosterone beginning at puberty.

- a. The Gershoni et al. study compares genes from adult cisgender men and adult cisgender women. (Brown Decl. ¶ 63.) However, hormone levels might explain the differences observed. Notably, the largest number of genes observed to be different are related to breast tissue, which is a type of tissue that can be changed with hormone therapy.

- b. The Haizlip et al. study reviews 56 articles relating to sex-based differences in skeletal muscle. (Brown Decl. ¶ 64.) This study draws no conclusions about the impact of hormone suppression or circulating testosterone on the differences the authors observe, underscored by the authors' concluding statement that future "studies should be aimed at determining the role of hormonal interventions in males and females given their clinical relevance."
- c. The studies cited by Dr. Brown about comparative foot and toe size of cisgender men and cisgender women do not look at the impact of circulating testosterone on those differences. In fact, several of the articles (cited in Brown ¶ 72) simply look at intra-sex differences among male athletes with no data about any differences between cisgender men and cisgender women.

9. I also disagree with Dr. Brown's suggestion that prepubertal cisgender boys have any inherent physiological athletic advantage over prepubertal cisgender girls. Dr. Brown states that "a number of studies indicate that males' athletic advantages over females begin before puberty, and may be apparent as early as six years of age" (Brown Decl. ¶ 23), but the cited studies do not support his apparent conclusion that differences in performance before puberty are attributable to innate physiological characteristics or genetics (Brown Decl. ¶¶ 65-68). The studies merely observe certain phenomena across a population sample but do not determine the cause for whatever is observed. Nor do the population studies purport to identify any relevant physiological differences between prepubertal cisgender boys and prepubertal cisgender girls for purposes of athletic performance. Differences in performance could be explained by, among other things, greater encouragement of athleticism in boys and greater opportunities to play sports. As noted above, the studies cited by Dr. Brown that actually attempt to define the cause

of average athletic differences between cisgender men and cisgender women all attribute those differences to circulating testosterone levels that typically diverge significantly between cisgender males and females at puberty. *See, e.g., Handelsman DJ, et al.. Endocrine Reviews* 2018; 39:803-29, p. 820 (summarizing evidence rejecting hypothesis that physiological characteristics are driven by Y chromosome).

10. I disagree with Dr. Brown’s point (c), which contends that administration of androgen inhibitors and cross-sex hormones to transgender women and adolescent girls after endogenous puberty does not eliminate the performance advantage of cisgender men or adolescent boys over cisgender women or adolescent girls in almost all athletic contests.<sup>2</sup> That assertion is based on speculation and inferences that have not been borne out by any existing evidence.

11. For example, Dr. Brown states that “[i]t is obvious that some effects of male puberty that confer advantages for athletic performance—in particular bone size and configuration—cannot be reversed once they have occurred.” (Brown Decl. ¶ 128.) This is misleading. First, decreased muscle will have some impact on corresponding bone. That means that bone grows when corresponding muscle grows and bone shrinks when corresponding muscle shrinks. *See Hart NH et al. J Musculoskelet Neuronal Interact* 2017; 17:114-139. Second, carrying larger bones without typical male range levels of circulating testosterone does not necessarily confer an athletic advantage. As I explained in my previous declaration, it could potentially slow a runner down or change an athlete’s weight class.

12. As discussed in my previous declaration, there are only two studies examining the effects of gender-affirming hormone therapy on the athletic performance of transgender female

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<sup>2</sup> *See supra* n.1

athletes. Neither of these limited studies proves there are meaningful athletic advantages for transgender women after receiving gender-affirming hormone therapy, which could only be shown by longitudinal transgender athlete case-comparison studies that control for variations in hormonal exposure and involve numerous indices of performance.<sup>3</sup>

13. In the absence of such data, Dr. Brown hypothesizes that gender affirming hormone therapy does not eliminate the performance advantage of women who are transgender, but there is no basis for him to assert with any degree of confidence that his hypothesis is true, much less that it is true “in almost all athletic contests.” (Brown Decl. ¶ 163). None of the studies cited by Dr. Brown actually measured athletic performance. They measured discrete physiological characteristics such as muscle size or grip strength without analyzing whether those characteristics actually conferred an athletic advantage in women who are transgender and who have lowered their levels of testosterone below 5 nmol/L.

- a. Dr. Brown cites to a portion of Handelsman DJ, et al. Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine Reviews* 2018; 39:803-829, discussing the effects of testosterone suppressing hormones on muscle size of male athletes. (Brown Decl. ¶¶ 133-35.) But Dr. Brown omits critical information. The studies discussed in the Handelsmann article measured the muscle size of male athletes whose levels of testosterone were reduced to between 5 nmol/L and 10 nmol/L. Based on those data, Handelsmann et al

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<sup>3</sup> My opinions about the impact of hormone therapy, including testosterone suppression and estrogen, on transgender people are not from the Harper study as Dr. Brown suggests. They are, by contrast, drawn from my more than 15 years of treating transgender patients with hormone therapy, my training as an endocrinologist, my review of the literature concerning the impact of circulating testosterone on athletic performance, and my experience as an expert in establishing policies for the inclusion of transgender athletes in the Olympics and World Athletics.

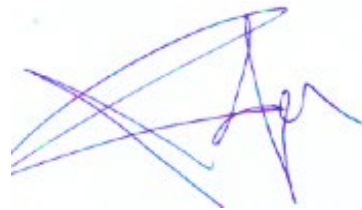
conclude that for transgender women, “the appropriate eligibility criterion for female athletic events should be a circulating testosterone of 5.0 nmol/L.” The Handelsmann article thus *supports* the inclusion of women who are transgender.

- b. The Knox study that Dr. Brown discusses in paragraphs 138 through 144 of his declaration does not accurately assess the impact of sustained hormone therapy on transgender women. The study documented the effects of administering hormone therapy to cisgender males for a period of 20 weeks. By contrast, gender affirming hormone therapy for transgender women who are on consistent treatment and eligible to participate on women’s teams under prevailing NCAA inclusion policies would be suppressing their levels for at least one full year. *See* (Endocrine Society Guidelines, p. 3887).
- c. The Wiik study that Dr. Brown cites does not study athletes at all. As the authors report, because the subjects were not athletes, findings might be attributable in part to the subjects improving over time as they got better at the items tested. For example, for knee flexion, the authors state “. . . measurements in the TW [transgender women] most likely arose from the learning effects from repeating the test . . .” The authors themselves state, “[i]t is also important to recognize that we only assessed proxies for athletic performance, such as muscle mass and strength. Future studies are needed to examine a more comprehensive battery of performance outcomes in transgender athletes” and “. . . it is still uncertain how the findings would translate to transgender athletes . . .”
- d. The Scharff study that Dr. Brown cites also does not support the conclusion he draws. Transgender women in the study had a decrease in grip strength and

transgender men had an increase in grip strength while on their respective hormone regimens. (Brown Decl. ¶ 151.) Dr. Brown suggests that the decrease in grip strength observed among transgender women still left them with more strength than would be expected for most cisgender women. However, the study was only intended to demonstrate the direction of change, not its absolute amount. The absolute degree of change in a larger population of transgender women along with the net impact on specific athletic activities remains conjecture, subject to future study.

14. In short, none of the evidence cited by Dr. Brown provides a sound medical justification for West Virginia's categorical exclusion of girls who are transgender from participating in scholastic athletics on the same teams as other girls." (Safer Decl. ¶ 44.)

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.



Executed on June 28, 2021

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Joshua D. Safer, MD, FACP, FACE